(1) US 4,117,390 issued September 26, 1978;

(2) US 5,412,268 issued May 2, 1995;

(3) Patent Abstracts of Japan of JP 57-116578, July 20, 1982, aka Patent Abstract Vol. 006 No. 211 (23.10.82);

(4) JP 57-116578, July 20, 1982;

(5) Patent Abstracts of Japan of JP 9-74701, March 18, 1997, aka Patent Abstract of Japan Vol. 97 No. 07 (31.07.97); and

(6) JP 9-74701, March 18, 1997.

Applicant further submits herewith a copy of a paper from the Austrian Patent Office (and an English translation thereof) conducted in Austrian Application No. A 1081/99 which is a counterpart of the above-noted US application. This paper discusses the following documents:

(7) DE 28 14 884 published October 11, 1979;

(8) WO 95/34117 published December 14, 1995;

(9) EP 0 320 415 published June 14, 1989; and

(10) EP 0 791 495 published August 27, 1997.

The Examiner is respectfully requested to consider the documents cited above.

Applicant notes that this Supplemental Information Disclosure Statement is being filed more than three months from the filing date but before receiving a first action on the

merits from the U.S. Patent and Trademark Office. Accordingly, consideration of the enclosed document is requested under 37 C.F.R. 1.97(b)(3).

Applicant notes that an Office Action on the Merits has not been received in the instant application. However, if an Office Action on the Merits has issued, and is crossing this statement in the mail, the undersigned hereby authorizes the Commissioner to charge any fee necessary for the consideration of this statement, including any payment under 37 C.F.R. § 1.17(p), to Applicants' Deposit Account No. 19-0089.

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BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to an electric motor system, preferably of the three-phase current design.

2. Discussion of Background Information

Electric motors are being used more and more in automotive engineering. Systems that handle the power exchange on the machine voltage level are known, such as the ISAD system (integrated starter-alternator-damper system).--

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Please replace the paragraphs beginning on line 14 of page 1 and ending on line 4 of page 2 of the specification with the following (see Appendix 2 for changes):

--SUMMARY OF THE INVENTION

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The aim of this invention is to create an electric motor system that can be used especially in automotive engineering environment, and that provides sufficient electric power or different levels of voltage for the supply of two different mains, especially for a turbocharger.

The electric motor system according to this invention is characterized by the fact that a first electric motor is provided, which is mechanically connected via the rotor thereof to a rotating shaft of an engine, especially of an internal combustion engine, that in addition, at

least one second electric motor is provided, that the second electric motor is mechanically coupled via the rotor thereof to a rotating part of a mechanical aggregate, especially to a turbo-engine, and that the first electric motor is electrically coupled to at least the second electric motor in order to exchange electric power at a freely selectable voltage level. With this invention, it is possible for the first time to create a separate, autarkic, internal electric circuit or component that is independent from the voltage level of the machine's mains. With this, the motor according to the invention and the electronic power circuits can be designed with optimal operating voltages. It is also known that it is usually more advantageous to transport electric power at higher voltages than those currently common in the machine's mains.

This internal electrical circuit or component is connected with the first motor through electronic power components such as diodes and transistors and via circuits in accordance with the state of the art, in order to design the internal electrical component in terms of its electric ratios, such as voltages and currents and their time curves.--

Please replace the paragraph beginning on line 31 of page 3 and ending on line 3 of page 4 of the specification with the following (see Appendix 3 for changes):

--In accordance with a further embodiment of the invention, the components for electric power exchange between the electric motors and/or an external electric circuit are

mounted in the casing of at least one electric motor. This embodiment serves primarily to create a compact electric motor for automotive engineering environment.--

Please replace the paragraphs beginning on line 18 of page 7 and ending on line 13 of page 8 of the specification with the following (see Appendix 4 for changes):

--In accordance with a further feature of the invention, the first and second electric motors have rotors with the same axis of rotation. Especially in automotive engineering environments it is an advantage if there is only one axis of rotation for a mechanic-electric-mechanic coupling.

The invention also provides for an electric motor system comprising at least a first electric motor comprising a first rotor. The first rotor is mechanically coupled to an engine. At least a second electric motor comprises a second rotor. The second rotor is mechanically coupled to a mechanical aggregate. An electronic power system is included. Each of the first electric motor and the second electric motor is electrically coupled to one another via the electronic power system in order to exchange electric power at a freely selectable voltage level.

At least one of the first and second motors may be of a three-phase type. The first rotor may be mechanically coupled to the engine via at least one rotating shaft. The engine may comprise an internal combustion engine. The first rotor may be mechanically coupled

to the internal combustion engine via at least one rotating shaft. The second rotor may be mechanically coupled to the aggregate via a rotating part. The aggregate may comprise at least one of a turbo-engine and a turbocharger. The aggregate may comprise at least one of a turbo-engine and a turbocharger. The electric motor system may further comprise a gearbox, wherein the first electric motor is mechanically connected to the engine via the gearbox. The first electric motor may be at least one of integrated with the engine and integrated with a flywheel of the engine. The engine may comprise a flywheel and wherein the first electric motor is structurally integrated with the flywheel. The first electric motor may be connected to at least one of at least one external electric circuit, and a machine's mains. The electric motor system may further comprise a casing, wherein each of the first and second motors are mounted in the casing. At least one of the first and second electric motors may be one of an asynchronous type motor, a synchronous type motor, and a reluctance type motor. An axis of the first rotor may be aligned with an axis of the second rotor, such that the first and second rotors of the first and second electric motors share a common axis of rotation. The first rotor may comprise one of an inner rotor and an outer rotor. The second rotor may comprise one of an inner rotor and an outer rotor. The first rotor may comprise an inner rotor and the second rotor may comprise an outer rotor.

The electric motor system may further comprise a mutual stator plate system. The mutual stator plate system may comprise at least one first stator and at least one second

stator, the at least one first stator forming part of the first motor and the at least one second stator forming part of the second motor. Each of the first and second rotors may be rotatable with respect to the mutual stator plate system.

The electronic power system may comprise at least one of a component and an external electric circuit, which is mounted in a casing. The casing may contain at least one of the first and second motors. The electric motor system may further comprise a casing for housing at least one of the first and second motors, wherein the casing includes one of a cooling system and a liquid cooling system. The electronic power system may be capable of supplying to a mains connection at least one of a direct current, an alternating current, and a three-phase current.

Each of the first and second motors may comprise a stator, and wherein at least one of the stators includes at least two winding systems. The at least two winding systems may be galvanically separated from one another. The at least two winding systems may be coupled magnetically with a main flux of at least one of the first and second motors. The at least two winding systems may be connected to separate electronic power circuits. The separate electronic power circuits may be galvanically separated from one another. At least one of the at least two winding systems may be connected via a rectifier bridge to at least one of a direct current supply, a battery-fed mains, and a machine's mains, whereby power can be exchanged in one direction. At least one of the at least two winding systems may be

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connected via a transistor bridge to at least one of a direct current supply, a battery-fed mains, and a machine's mains, whereby power can be exchanged in both directions.

At least one of the first and second motors may be operated as a generator and as a motor. The generator may be configured to charge a connected machine's mains.

A least one of the first and second motors can be operated as a generator and as a starter. The first motor may function as the generator and as the starter, and wherein the starter is mechanically coupled to the engine. Each of the at least two winding systems may be configured to allow a galvanically separable electric power exchange to occur between circuits connected to the winding systems. The at least two winding systems may be controllable via electronically controlled switches. The electronically controlled switches may be configured to take over control of electric parameters from the at least two winding systems. The at least two winding systems may be coupled to non-controllable electronic power elements. The non-controllable electronic power elements may comprise diodes. Each of the at least two winding systems may be galvanically independent of the other winding system and may be connected with electromechanical function groups on generally different voltage levels. The at least two winding systems may be closely magnetically coupled such that an electromagnetic power exchange occurs between the at least winding systems independent of rotor rotation according to a transformer principle. The at least two winding systems may be weakly magnetically coupled such that a slight electromagnetic

influence results on the at least two winding systems. A freely selectable electromagnetic power exchange may occur between the at least two winding systems and a rotor shaft connected to one of the first and second rotors. The freely selectable electromagnetic power exchange may be adapted to occur by controlling electromagnetic parameters. The electromagnetic parameters may comprise at least one of currents and flux linking of at least one of the at least two winding systems. Each of the first and second electric motors may be mounted in a casing. Each of the first and second electric motors may comprise one of an asynchronous motor, a synchronous motor and a reluctance motor. Each of the first and second rotors may rotate with respect to a common axis.

The invention also provides for an electric motor system comprising at least a first electric motor comprising a first rotor and a first stator. The first rotor is mechanically coupled to an engine. At least a second electric motor comprises a second rotor and a second stator. The second rotor is mechanically coupled to a mechanical aggregate. The first stator is coupled to the second stator. An electronic power system is included. Each of the first electric motor and the second electrical motor is electrically coupled to one another via the electronic power system in order to exchange electric power at a freely selectable voltage level.

The invention still further provides for an electric motor system comprising a casing and at least a first electric motor comprising a first rotor and a first stator system. The first

rotor is mechanically coupled to an engine. At least a second electric motor comprises a second rotor and a second stator system. The second rotor is mechanically coupled to a mechanical aggregate. The first stator is coupled to the second stator. Each of the first stator system and the second stator system is coupled to the casing. An electronic power system is provided. Each of the first rotor and the second rotor rotate about a common axis and each of the first electric motor and the second electrical motor is electrically coupled to one another via the electronic power system in order to exchange electric power at a freely selectable voltage level.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is explained in more detail based on the design examples illustrated in the figures.

Fig. 1 shows an electric motor with rotors with the same axis of rotation;

Fig. 2 shows a basic sketch of the electrical circuit of the motor;

Fig. 3 shows the electric motor with the electronic elements;

Figs. 4 and 5 show an embodiment of the electric motor;

Fig. 6 shows a basic sketch of an electrical circuit of the motor; and

Fig. 7 shows an interconnection between a generator and a compressor engine via a converter.

DETAILED DESCRIPTION OF THE INVENTION

By way of introduction, it is noted that in the described embodiment the same parts and the same states are allocated the same reference numbers and the same component names, whereby the disclosures contained throughout the description can be applied by analogy to the same parts and the same states with the same reference numbers or same component names. Furthermore, position details given in the description, e.g. top, bottom, side, etc., relate to the figure being described and illustrated at the time and with a change of position should be transferred accordingly to the new position.--

Please replace the paragraph between lines 20-29 of the specification with the following (see Appendix 5 for changes):

--Basically, various design variations for such electric motors are possible. Fig. 1 shows a first electric motor 10 with one stator 1, which has one winding 2. In the cylindrical motor array, one winding 2 is on the inside of the stator 1 or the stator bore, and can be designed as a groove or air-gap winding. The second electric motor 11 has one winding 3 on the outside of the stator 4 as a groove or air-gap winding, whereby winding 2 interacts with a rotor 5 designed as an inner rotor, and winding 3 interacts with a rotor 6 designed as an outer rotor. The rotors 5, 6 can be designed with permanent magnet excitation, as cage rotors, with a reluctance structure, etc. The two rotors 5, 6 are mounted mechanically on one suitable bearing 7, 8 each according to the state of the art in the casing 9.--

Please replace the paragraph between lines 24-30 of the specification with the following (see Appendix 6 for changes):

--The two winding systems 22, 23 are connected via separate electronic power circuits 24, 25 to individual power circuits which are also preferably galvanically separated. Thus, the winding system 23 can be connected via the electronic power circuit 24, for example a rectifier bridge or a transistor bridge with a direct current or battery-fed mains, preferably with the machine's mains 26, for power exchange in one or both directions. Naturally, this winding system 23 could also be operated as a motor, preferably as the starter for a combustion engine.--

Please replace the paragraphs between lines 22-29 of the specification with the following (see Appendix 7 for changes):

--The generator is connected via its rotor to a motor, in particular a combustion engine, through a gearbox 35. The compressor motor 11 is connected via its rotor to a turbo engine 34. A winding system 22, 23 is connected via an electronic power circuit 4 to a machine's mains 6, whereby the winding systems 22, 23 can be separated galvanically.

Thereby, the first and the second electric motors can be mounted in a casing. Equally, the first and the second motors may have rotors with the same axis of rotation.--

Please replace the Abstract with the Abstract of the Disclosure appended on the next page